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Sediment and nutrients derived from land and water resource practices are the primary nonpoint pollutants identified in rivers of the western United States. It is well known that phosphorus can adsorb to, and be transported with, sediment materials; however, there are a number of variables that could influence partitioning at a given location. Correlation of site-specific conditions could provide information to help understand the principal factors that regulate these contaminants.

The relationships between sediment characteristics (e.g., clay, silt, and organic content) and effective partitioning into dissolved and particulate fractions can affect the nutrient loading and transport properties and the bioavailability, uptake, and productivity characteristics in lakes, streams, and reservoirs. This information is essential to develop practical control or removal mechanisms and appropriate guidance for nonpoint source pollution control and watershed management.

This project is also intended to support further evaluation of sediment ponds, infiltration basins, and wetland systems that may be considered for sediment and phosphorus management. These features are often cited as nonpoint "Best Management Practices" that could be integrated as part of coordinated watershed water quality improvement plans (e.g., basin-wide TMDL planning).

Due to funding limitations, the scope of work was limited to conducting an initial literature review to assess the relevance of available publications that address this topic.

The long-term specific objectives of this project are described as follows:

The overall goal of this study is to gain a better understanding of factors that regulate nutrient sediment partitioning in aquatic ecosystems to help provide practical guidance to better predict the loading, transport, and removal characteristics. This topic is fairly complex if considered in the most fundamental sense. Consequently, the investigations of this project will be directed to compile and interpret existing data and available information.

The initial literature review will be supplemented by a limited experimental program that will be directed toward specific site conditions, basic classes of soils, and phosphorus loading that represents a defined range of nonpoint pollution conditions. Consequently, the scope of these investigations will shift from broad-based review to more detailed investigations and direct applications as a means to use limited funds efficiently.

Subject to funding limitations, the project activities will include:

- Review literature to evaluate factors that regulate sediment and nutrient interactions
- Evaluate data sources and ability to make correlations based on available data
- Develop an experimental plan to examine selected sediment/phosphorus characteristics

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- Basic investigations to examine nutrient extraction under controlled conditions
- Final correlation, interpretation, and reporting of project results

The initial literature search and compilation of all materials that were potentially relevant to this topic proved to be a significant effort. Extensive literature citations were compiled to determine which sources might be relevant references.

Based on this initial review, it is evident there is an extensive amount of information pertaining to fundamental properties of sediment and phosphorus in aquatic systems; however, much less information was found that is related to soil/sediment characteristics, partitioning, and nutrient transport characteristics directly associated with irrigated agriculture. This does not necessarily mean this information does not exist, but it could require further search of older publications or other types of reference sources.

Overall, this was a good first effort, and it appears that the fundamental information provides an adequate basis; however, further project work will include additional search of other resources and a more detailed analysis of the material available to correlate specific results.

At this stage of the project, there are no direct partners. This initial literature review will provide reference materials for the ongoing TMDL planning efforts in the Boise, Payette, and Snake River basins. Initial discussions have also indicated interest in collaboration, including additional funding through a cost-share partnership with the Pacific Northwest Region.

Fairly voluminous literature reference citations were compiled that will serve as reference material for further stages of the project.